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A PRELIMINARY INTROSPECTIVE STUDY OF THE ASSOCIATION-REACTION CONSCIOUSNESS.

By L. R. GEISSLER

The following report appears in advance of a more exhaustive introspective analysis of the "complex," begun by Miss E. T. Burr and the present writer in the Psychological Laboratory of Cornell University during the Summer Session of 1910. This study is to be continued during the present year. The experiments were conducted by Miss Burr; and the author, whose introspections are here reported, was one of the four principal observers. The material consisted of pairs of pictures or stories, presented to the observer at the beginning of the hour so that he could choose the one member of the pair without the experimenter's knowing which had been selected. The reaction-time was taken by a stopwatch, registering fifths of seconds. After every association the observer gave a detailed description of his state of mind and its contents, from the "ready-signal" until he had given his association-word. He was also asked to adhere as closely as possible to the temporal sequence of his experiences, and to notice in particular the background processes.

The introspections of *G* seem to be significant for three special points. (1) They indicate the general frame of mind during an association-reaction experiment. (2) They show that some of the mental processes occurring in *G*'s reactions are entirely indifferent to the presence or absence of a "complex." And (3) they furnish a clue to the nature and symptoms of certain kinds of "complexes."

The ideational type of *G* is predominantly verbal-motor. He is so largely dependent upon his general bodily attitude that he is not in the right mood toward the experiment, that is, in the attitude of passive, impartial indifference, until he has assumed the exact position in the chair which he happened to take at the beginning of the hour. His mental attitude at the moment of the "ready-signal" was as a rule one of calm, expectant attention, and indifference to extraneous stimuli; in the background was a vague sense of being "on guard." No further details of this state can as yet be given. Most of the insignificant stimulus-words made no material change in this state. The focus of attention shifted quickly

from the perception of the stimulus to the pronunciation of the reaction-word. The latter frequently appeared with reflex-like regularity; 45 out of *G*'s 91 irrelevant reactions took less than 1.5 sec., with an average of 1.2 sec. and a m. v. of .1 sec. In all these cases the general pattern of consciousness was that of a sharp focus and a very vague background. A few times only a sort of "blank" was experienced, as it is described, for example, in the following record: "verbally repeated stimulus-word ('East-Side') to myself, then short, empty pause, empty staring, fixation of objects opposite me, but nothing clear in mind for short moment, muscular sensations from movement of eyes in easterly direction, and reaction-word 'New York' came immediately" (time, 2.4 sec.). The reaction-times for the "blank" experiences average about 2 sec. Sometimes expectation is so intense as to anticipate a stimulus-word before it is completely heard; *e. g.*, "crisis" was expected to be "Christ," and "charity" to be "chariot." In such cases the expected word is usually given as the observer's reaction.

While with the insignificant words a great uniformity of the attentive state of mind thus prevailed, in the case of significant stimuli, the conditions were extremely labile. Here the observer was often unable exactly to describe his attitude; he "felt lost," or was "in a state of suspense," or he "had no memory or recognition of the stimulus-word until a reaction word occurred to him." Several times *G* had prepared himself for certain "dangerous" words by thinking beforehand of a "safe" reaction. But at the proper time this preparation failed to work, because some other mental process, perhaps an image or a strong feeling, successfully interfered with or delayed the pre-arranged reaction. Quite frequently the stimulus-word was repeated, more and more automatically, so that it gradually dropped out of the focus into the background, while nothing else took its place. The consequence was a "blank," which may have lasted sometimes as long as a second. The recovery was very sudden; a new idea appeared and led to an almost explosive reaction. It is difficult to describe this state more fully without mentioning its contents, which will be done in the third section. As the experiments were never continued for more than 50 minutes, *G* never experienced any signs of fatigue.

As regards the mental processes which are indifferent to the presence of a "complex," it has already been pointed out that *G* was, as a rule, entirely oblivious to his surroundings. Only in 8 of the insignificant and in 3 of the significant cases did environmental stimuli, such as visual objects or sounds, influence him by suggesting reaction-words. As *G*

is a very poor visualizer, the frequency of his visual images in these experiments seems remarkable. They were, of course never more than vague, except in two significant reactions, where he had seen some striking picture that had made a deep impression upon his mind. Most of his visual images were of a symbolic character; *e. g.*, a whole orchestra was represented by "a black spot with white specks in it," indicating the men in dress-suits and the white front of their shirts. Verbal ideas were by far the most numerous, ranging in degree from actual speech-movements to what *G* calls his "verbalizing tendency," in which sometimes a mere upward pressure of the tongue against the roof of the mouth indicates the beginning of a word or letter. In many cases the stimulus-word is simply supplemented to form a new (reaction-)word; *e. g.*, "beauty" is completed by "ful" to stand for "beautiful." No less frequent are alliterations and synonyms, while rhymes and even nonsense-rhymes occur at times. These verbal processes are distributed over insignificant and significant cases with relatively equal frequency. Closely related to *G*'s verbal ideas are the kinæsthetic elements of his consciousness. He frequently experienced strains indicating "a rigidity of the mouth and other speech-organs." Sometimes the mere "initial movement to close lips" leads to pronouncing a reaction-word beginning with *b* or *p*, such as "picture" or "boy." *G* often speaks of "a tendency to move," "to turn head," "to say something," or the like. In one case he had successively "several tendencies to move lips, but no anticipation of what was to come out," and in another case he made "several tentative lip and eye-movements." The latter are especially important for his whole mental make-up, as they frequently carry or represent to him the logical meaning of an idea. The symbolic character of the eye-strains and movements is, *e. g.*, brought out in the following introspections: "I had eye-movements toward place on page where stimulus-word is found," or: "on my lips definitely the word 'sesame' (stimulus was "open"), was inhibited, then word "door" with reference to China, looking sideways to left, like studying map of whole world where China is on left side." (This map had been used in my high school course.) In a good many cases *G* could not indicate the psychological processes underlying his thoughts, meanings, and references. Several reasons for this fact may be inferred from his introspections. Sometimes the thoughts were too fleeting or too vague; *e. g.*, "the thought came like a flash: that is good, safe," meaning of course that the reaction-word would not betray him. Or, sometimes, too many ideas occurred at once; "lots of things crossed my mind; . . . ideas are

there in some sort of vague awareness only." Again, the thoughts may form a chain of syllogisms, the final conclusion alone being present in a more concrete form. Usually the thoughts were interfered with by a strong emotional coloring, as in the following case: Stimulus: Spanish, Reaction: American, time: 1.9 sec. "I vaguely thought of Spanish-American war, mostly verbal, with thought of Cuba, a reference which seemed emotional, I had taken sides with the Spaniards." Quite frequently the reaction-word is accompanied in the background of consciousness by a thought of its justification, which is probably the result of the *Aufgabe* "not to betray myself." This *Aufgabe* acts, of course, like a determining tendency; it was not often conscious. Even when it was experienced, it was not always present in the same form or to the same degree. For example, the stimulus-word "reddish," referring to the hair of a girl in a story, led to the reaction of "rabbit," after 3.5 sec., through the following process: "association is due to thought that rabbit is spelt with 2 b's just as reddish has 2 d's, mostly verbal. After long, unpleasant inhibition of speech-organs, rigidity of lips and mouth, frowning and squinting, 'rabbit' came with thought: 'what is the difference? No need of sensible word.' This reasoning occurred while and after saying the word 'rabbit.'" It is worth notice that the "tendency to say something quickly" was stronger in the significant cases, while "a determination to say something sensible" prevailed with irrelevant stimuli. But this is not a frequent or a very consistent phenomenon. The perseverative tendency exerted its influence rather more frequently. Words that had occurred previously in introspections, or as stimuli, or as associations, were employed once or twice again during the same hour, usually with the recognition that they had been used before. The main reason why all these various different mental processes are grouped together is that they seem to have no special significance for the hidden complex, as they occur at least just as frequently, and often more so, with insignificant as with significant association reactions.

On the other hand, the mental processes which are apt to be connected with a "complex" appear only very rarely with indifferent words. It is much more difficult to make a sharp analysis of these symptoms and to enumerate separate processes, because as a rule the complex is felt merely as a general mental and physiological inhibition. The former is experienced as a "blank" or interruption of the regular course of mental life, as an obstacle or block in the stream of consciousness. *G* pictures it to himself in cross-section like the dry passage which the Israelites used to cross the Red Sea.

He finds three stages in the mental aspect of inhibition. Immediately upon hearing the significant word, consciousness is crowded with ideas in the focus and swamped by a strong affection. This stage passes more or less gradually into an empty staring, waiting, seeking, with practically no focus and all background. Finally a single idea comes, shooting to a head, that is, to focal clearness and discharging itself into movements of speech. It thus overcomes the inhibition or brings about its *Auflösung*, and initiates a state of bodily relief accompanied by a sudden change from the previous strong unpleasantness to a less strong pleasantness. These three stages seem to occupy various lengths of time and reach different degrees of intensity. The physiological side of inhibition includes such phenomena as holding of the breath, upward pressure of the diaphragm, drawing inward of the abdominal region, and rigidity of the laryngeal organs, tongue-tightness, and open mouth. The strains and pressures coming from these different parts of the body make up a large part of the background that is left during the second stage, the "empty staring and waiting period," during which one feels utterly helpless.

The feelings or emotions which in *G* characterize the presence of a "complex" are of two kinds, excitement and anxiety on the one hand, and relief on the other. The excitement seems to be mainly a quick, flash-like, but strongly unpleasant complex of faint visceral sensations, while the anxiety takes a certain time to develop, gradually becoming more and more unpleasant and at the same time confining itself more and more to the sensations due to muscular rigidity. There does not seem to be any regularity in *G*'s records about the occurrence of the one or the other emotion. Both emotions are subject to decay after several recurrences in the same hour. The visceral complex loses in intensity and excitement gradually wears off; and similarly, anxiety slowly disappears with the shortening of the empty waiting period. The change from excitement or anxiety to relief sets in with the appearance of a new idea. Relief is characterized, according to *G*'s observations, by the resumption of normal breathing, beginning usually with a long exhalation which leads sometimes to a whispered "oh!" and by the return of the muscles from the strained contraction to a normal equilibrium. This loosens the vocal organs and makes the pronunciation of the reaction-word possible. The speaking and hearing of the voice is moderately pleasant. In a few rare instances a "slight feeling of relief at easy reaction" is experienced, even in cases of insignificant stimuli, while there is no preceding excitement or anxiety.

These emotions are not the only symptoms of a complex. Quite frequently there are also references to the picture seen or the story read. Some of them consist of images, movements, or kinæsthetic sensations connected with the study of the picture or story, and may occur with varying degrees of completeness and vagueness. The other kind of references to the complex is more puzzling. They read like the following: "memory of end of story," or: "conscious of story," again: "aware that my association was taken from story," "the whole story was present, can't tell how," or this: "I knew stimulus-word had nothing to do with picture." The last quotation shows that some of these references appeared even when the stimulus was not intended to be significant. Probably these hints of the complex are signs of the general attitude of "being on guard," and should be grouped with the frequent attempts at justification of the given reaction-word. It may be mentioned that *G* did not always successfully maintain this attitude, but such cases are too rare to deserve fuller treatment.

What, then, is the "complex?" According to these results it is a strongly unpleasant group of ideas (connected with the concealed object), reinforced by certain organic sensations, and characterized by a quick change from focal crowdedness through a momentary blankness to the dominance of a single focal idea. It may, perhaps, be surprising to some readers that nothing has been said about any of the specifically Freudian complexes, such as the wish-complex, the sexual-complex, or the father-complex. Probably the conditions of these experiments were not favorable for their occurrence; the author cannot deny their existence in his dream life. It is hoped that future work will throw more light upon these problems.